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Application No.: 10/800,168

Docket No.: TOW-068

AMENDMENTS TO THE CLAIMS

1. (currently amended) A fuel cell system comprising a fuel cell having an anode and a cathode, wherein a hydrogen-containing gas is supplied to said anode and an oxygen-containing gas is supplied to said cathode for generating a load current, said fuel cell system further comprising:

a humidifier for humidifying said oxygen-containing gas supplied to said cathode of said fuel cell; and

an oxygen-containing gas flow rate controller for controlling a flow rate of said oxygen-containing gas supplied to said cathode such that humidity of said hydrogen-containing gas is maintained within a predetermined range less than 100%;[[.]]

wherein said fuel cell system is free of a humidifier for humidifying said hydrogen-containing gas supplied to said anode of said fuel cell.

2. (original) A fuel cell system according to claim 1, further comprising a humidity sensor for detecting humidity of said hydrogen-containing gas.

3. (original) A fuel cell system according to claim 2, further comprising a circulation passage for circulating said hydrogen-containing gas to supply said hydrogen-containing gas to said anode, wherein said humidity sensor is disposed in said circulation passage.

4. (original) A fuel cell system according to claim 1, further comprising:

a circulation passage for circulating said hydrogen-containing gas to supply said hydrogen-containing gas to said anode; and

a hydrogen-containing gas flow rate controller,

wherein said oxygen-containing gas flow rate controller controls a flow rate of said oxygen-containing gas supplied to said cathode and said hydrogen-containing gas flow rate controller controls a flow rate of said hydrogen-containing gas supplied to said anode such that humidity of said hydrogen-containing gas is maintained within a predetermined range less than

Application No.: 10/800,168

Docket No.: TOW-068

100%.

5. (currently amended) A fuel cell system comprising a fuel cell having an anode and a cathode, wherein a hydrogen-containing gas is supplied to said anode and an oxygen-containing gas is supplied to said cathode for generating a load current, said fuel cell system further comprising:

a humidifier for humidifying said oxygen-containing gas supplied to said cathode of said fuel cell; and

a switching valve;

a bypass passage as a passage of said oxygen-containing gas bypassing said humidifier;

and

a valve controller for controlling said switching valve such that said oxygen-containing gas selectively passes through said humidifier ~~and~~ or said bypass passage, for maintaining humidity of said hydrogen-containing gas within a predetermined range less than 100%;[[.]]

wherein said fuel cell system is free of a humidifier for humidifying said hydrogen-containing gas supplied to said anode of said fuel cell.

6. (original) A fuel cell system according to claim 5, further comprising a humidity sensor for detecting humidity of said hydrogen-containing gas, wherein said valve controller controls a flow rate of said oxygen-containing gas passing through said humidifier or said bypass passage for maintaining humidity of said hydrogen-containing gas within a predetermined range less than 100%.

7. (original) A fuel cell system according to claim 6, further comprising a circulation passage for circulating said hydrogen-containing gas to supply said hydrogen-containing gas to said anode, wherein said humidity sensor is disposed in said circulation passage.

8. (currently amended) A fuel cell system according to claim 5, ~~wherein~~ further comprising:

Application No.: 10/800,168

Docket No.: TOW-068

a circulation passage for circulating said hydrogen-containing gas to supply said hydrogen-containing gas to said anode; and

a hydrogen-containing gas flow rate controller for controlling a flow rate of said hydrogen-containing gas circulating through said circulation passage;[[,]]

wherein said valve controller controls a flow rate of said oxygen-containing gas supplied to said cathode and said hydrogen-containing gas flow rate controller controls a flow rate of said hydrogen-containing gas supplied to said anode such that humidity of said hydrogen-containing gas is maintained within a predetermined range less than 100%.

9. (new) A method of operating a fuel cell system comprising a fuel cell having an anode and a cathode, wherein a hydrogen-containing gas is supplied to said anode and an oxygen-containing gas is supplied to said cathode for generating a load current, said method comprising the steps of:

humidifying said oxygen-containing gas supplied to said cathode of said fuel cell; and
controlling a flow rate of said oxygen-containing gas supplied to said cathode such that humidity of said hydrogen-containing gas is maintained within a predetermined range less than 100%;

wherein said fuel cell system is free of a humidifier for humidifying said hydrogen-containing gas supplied to said anode of said fuel cell.

10. (new) The method of claim 9, further comprising the step of detecting the humidity of said hydrogen-containing gas with a humidity sensor.

11. (new) The method of claim 10, further comprising the step of employing a circulation passage to circulate said hydrogen-containing gas to supply said hydrogen-containing gas to said anode, wherein said humidity sensor is disposed in said circulation passage.

Application No.: 10/800,168

Docket No.: TOW-068

12. (new) The method of claim 9, further comprising the steps of:

providing a circulation passage to circulate said hydrogen-containing gas to supply said hydrogen-containing gas to said anode; and

maintaining humidity of said hydrogen-containing gas within a predetermined range less than 100% by controlling the flow rate of said oxygen-containing gas supplied to said cathode and a flow rate of said hydrogen-containing gas supplied to said anode.

13. (new) A method of operating a fuel cell system comprising a fuel cell having an anode and a cathode, wherein a hydrogen-containing gas is supplied to said anode and an oxygen-containing gas is supplied to said cathode for generating a load current, said method comprising the steps of:

humidifying said oxygen-containing gas supplied to said cathode of said fuel cell with a humidifier;

providing a bypass passage as a passage of said oxygen-containing gas bypassing said humidifier; and

controlling a switching valve such that said oxygen-containing gas selectively passes through said humidifier or said bypass passage, for maintaining humidity of said hydrogen-containing gas within a predetermined range less than 100%;

wherein said fuel cell system is free of a humidifier for humidifying said hydrogen-containing gas supplied to said anode of said fuel cell.

14. (new) The method of claim 13, further comprising the step of detecting the humidity of said hydrogen-containing gas with a humidity sensor and maintaining humidity of said hydrogen-containing gas within a predetermined range less than 100% by controlling the flow rate of said oxygen-containing gas passing through said humidifier or said bypass passage.

15. (new) The method of claim 14, further comprising the step of providing a circulation

Application No.: 10/800,168

Docket No.: TOW-068

passage to circulate said hydrogen-containing gas to supply said hydrogen-containing gas to said anode, wherein said humidity sensor is disposed in said circulation passage.

16. (new) The method of claim 13, further comprising the steps of:

providing a circulation passage to circulate said hydrogen-containing gas to supply said hydrogen-containing gas to said anode;

controlling a flow rate of said hydrogen-containing gas circulating through said circulation passage; and

maintaining humidity of said hydrogen-containing gas within a predetermined range less than 100% by controlling a flow rate of said oxygen-containing gas supplied to said cathode and controlling a flow rate of said hydrogen-containing gas supplied to said anode.